Amendments to the Claims

This listing of claims will replace all previous listings of claims on record.

Listing of Claims:

1. (Currently amended) A data transmission apparatus having ingress and egress ports, and comprising:
a scrambler ~~for splitting~~ to split a fanout of ingress data, from each ingress port to the egress ports, into a first sub-group and a second sub-group, and ~~for scrambling~~ to scramble the first and second sub-groups according to a scrambling sequence function to provide a combined scrambled output of the first and second sub-groups having a constant number of toggled bits with respect to time.

2. (Original) The data transmission apparatus of claim 1 wherein the first and second sub-groups have substantially equal parasitic capacitance.

3. (Currently amended) The data transmission apparatus of claim 1 wherein the scrambling sequence function includes first and second scrambling patterns ~~for scrambling~~ to scramble the first and second sub-groups, respectively.

4. (Original) The data transmission apparatus of claim 3 wherein the ingress data is time division multiplexed (TDM) data, and the first and second scrambling patterns each have a bit width equal to a grain bit width of the ingress data.

5. (Currently amended) The data transmission apparatus of ~~claim 1~~ claim 3 wherein the first and second scrambling patterns each have a length of 2 scrambling elements.

6. (Original) The data transmission apparatus of claim 1 wherein the constant number of toggled bits is equal to half the number of sub-groups.

7. (Currently amended) The data transmission apparatus of claim 1 wherein the scrambler further comprises ingress port logic ~~for splitting~~ to split the ingress data into a plurality of

groups, a first group including the ~~the~~ first and second sub-groups, and a second group including third and fourth sub-groups, the scrambler ~~for scrambling~~ to scramble the third and fourth sub-groups according to a second scrambling sequence function to provide a combined scrambled output of the third and fourth sub-groups ~~has~~ having a second constant number of toggled bits with respect to time.

8. (Original) The data transmission apparatus of claim 7 wherein the third and fourth sub-groups have substantially equal parasitic capacitance.

9. (Original) The data transmission apparatus of claim 1 wherein the scrambler scrambles the first and second sub-groups according to the scrambling sequence function so that the constant number of toggled bits is independent of the ingress data.

10. (Original) The data transmission apparatus of claim 1 wherein the scrambler scrambles the first and second sub-groups according to the scrambling sequence function to provide a first sub-group scrambled output and a second sub-group scrambled output.

11. (Currently amended) The data transmission apparatus of claim 10 wherein the scrambler further comprises a counter ~~for counting~~ to count timeslots in the ingress data, and a plurality of XOR gates ~~for scrambling~~ to scramble the ingress data in response to an output of the counter, to provide the first and second sub-group scrambled outputs.

12. (Currently amended) The data transmission apparatus of claim 10 wherein the scrambler further comprises first and second sub-group interleavers ~~for providing~~ to provide the first and second sub-group scrambled outputs, respectively.

13. (Currently amended) The data transmission apparatus of claim 1 further comprising:
egress logic ~~for receiving and retransmitting~~ to receive and retransmit scrambled data received from the scrambler.

14. (Currently amended) The data transmission apparatus of claim 13 wherein the egress logic comprises first and second sub-group egress selection switches ~~for receiving and retransmitting~~ to receive and retransmit first and second sub-group scrambled outputs,

respectively, from the scrambler.

15. (Original) The data transmission apparatus of claim 13 wherein the egress logic retransmits scrambled data such that it reorders the scrambled data.

16. (Original) The data transmission apparatus of claim 13 wherein the egress logic retransmits scrambled data such that it changes the timing of the scrambled data and transfers an identifier of the scrambling sequence function.

17. (Currently amended) The data transmission apparatus of claim 1 further comprising: a de-scrambler ~~for receiving~~ to receive scrambled data, and ~~for de-scrambling~~ to de-scramble the scrambled data based on the scrambling sequence function.

18. (Currently amended) The data transmission apparatus of claim 17 wherein the de-scrambler comprises a first sub-group descrambler and a second sub-group descrambler, ~~for de-scrambling~~ to de-scramble the first sub-group and second sub-group, respectively.

19. (Original) The data transmission apparatus of claim 17 wherein the de-scrambler de-scrambles the scrambled data based on a scrambling sequence function identifier.

20. (Currently amended) The data transmission apparatus of claim 19 wherein scrambling sequence function identifier is ~~selected from the group consisting of:~~ an ingress timeslot number, an egress group number, ~~and~~ or a sub-group identifier.

21. (Original) The data transmission apparatus of claim 17 wherein the de-scrambler selectively de-scrambles the first-sub group and the second sub-group of an egress port group in response to a configuration signal.

22. (Currently amended) The data transmission apparatus of claim 17 wherein the de-scrambler comprises a first AND gate coupled to first XOR gates ~~for de-scrambling~~ to de-scramble the first sub-group, and a second AND gate coupled to second XOR gates ~~for de-scrambling~~ to de-scramble the second sub-group.

23. (Currently amended) The data transmission apparatus of claim 17 wherein the de-scrambler comprises a counter ~~for determining~~ to determine the scrambling sequence function.

24. (Original) The data transmission apparatus of claim 1 wherein the data transmission apparatus is a memory switch.

25. (Currently amended) A computer-implemented method of transmitting data in a data transmission apparatus having ingress and egress ports, comprising:

splitting a fanout of ingress data, from each ingress port to the egress ports, into a first sub-group and a second sub-group; and

scrambling the first and second sub-groups according to a scrambling sequence function into first and second scrambled data, respectively, the first and second scrambled data, when considered together, having a constant number of bits that are toggled with respect to time.

26. (Currently amended) The computer-implemented method of claim 25 wherein the ~~the~~ first and second sub-groups have substantially equal parasitic capacitance.

27. (Currently amended) The computer-implemented method of claim 25 wherein the step of scrambling the first and second sub-groups according to the scrambling sequence function includes scrambling the first and second sub-groups according to first and second scrambling patterns, respectively.

28. (Currently amended) The computer-implemented method of claim 27 wherein the first and second scrambling patterns each have a bit width equal to a grain bit width of the ingress data, when the ingress data is time division multiplexed (TDM) data.

29. (Currently amended) The computer-implemented method of ~~claim 25~~ claim 27 wherein the first and second scrambling patterns each have a length of 2 scrambling elements.

30. (Currently amended) The computer-implemented method of claim 25 wherein the constant number of toggled bits is equal to half the number of sub-groups.

31. (Currently amended) The computer-implemented method of claim 25 wherein the step of splitting the fanout of ingress data includes splitting the ingress data into a plurality of groups, a first group including the ~~the~~ first and second sub-groups, and a second group including third and fourth sub-groups, and further comprising the step of scrambling the third and fourth sub-groups according to a second scrambling sequence function to provide a combined scrambled output of the third and fourth sub-groups having a second constant number of toggled bits with respect to time.

32. (Currently amended) The computer-implemented The method of claim 31 wherein the third and fourth sub-groups having substantially equal parasitic capacitance.

33. (Currently amended) The computer-implemented method of claim 25 wherein the constant number of bits that are toggled with respect to time is independent of the ingress data.

34. (Currently amended) The computer-implemented method of claim 25 wherein the step of scrambling the first and second sub-groups according to the scrambling sequence function provides a first sub-group scrambled output and a second sub-group scrambled output.

35. (Currently amended) The computer-implemented method of claim 25 further comprising the step of de-scrambling the retransmitted data based on the scrambling sequence function.

36. (Currently amended) A scrambler circuit for use with a data transmission apparatus having ingress and egress ports, the scrambler comprising:

ingress logic ~~for splitting~~ to split a fanout of ingress data, from each ingress port to the egress ports, into a first sub-group and a second sub-group; and

scrambling logic ~~for scrambling~~ to scramble the first and second sub-groups according to a scrambling sequence function to provide a combined scrambled output of the first and second sub-groups having a constant number of bits that are toggled with respect to time.

37. (New) The data transmission apparatus of claim 1 wherein the first and second sub-groups carry same data prior to being scrambled.